Evidence based case report

Managing an elderly patient with a fractured femur

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BMJ 2000;320:102–3

My patient, an elderly woman, had been admitted to the trauma ward via the accident and emergency department on the previous day because she had sustained a trochanteric fracture of the left hip after a simple fall at home. She was in average health for someone of 82 and had a medical history that included hypertension, a myocardial infarction (three years previously), and a fractured wrist (eight years before). Since her husband's death she had lived alone in sheltered accommodation.

I needed to establish the extent to which her management could be evidence based and, where possible, to determine the optimum management using evidence based medicine. I also decided that I could spare no more than four hours to identify the evidence and that I should be able to do this from my office computer.

The search

I used Medline, the *Cochrane Library*[1] and *Best Evidence*[2] (both on CD Rom), and the following internet sites: the NHS Centre for Reviews and Dissemination (www.nhscrd.york.ac.uk), the American Academy of Orthopedic Surgeons (www.aaos.org), Omni (www.omni.ac.uk), the Trip Database (www.gwent. nhs.gov.uk/trip/), the Scottish Intercollegiate Guidelines Network (SIGN; www.show.scot.nhs.uk/sign/home.htm), and Bandolier (www.jr2.ox.ac.uk/Bandolier). Unless otherwise indicated, I used the search term "hip fracture." I found that having access to both published Cochrane reviews and the preliminary findings of reviews in preparation was helpful.

An initial search of Medline for randomised trials showed that there had been 48 studies in the past three years alone. Given the time available, I limited my search to systematic reviews of randomised trials. Where my questions were not answered by these reviews, I referred to independent reviews and clinical guidelines.

The evidence

Initial management

In the accident and emergency department, the broken leg should be rested in the position of comfort and traction should not be used.[1 3] If essential, pain relief and a local nerve block may be used to supplement conventional analgesia.[2 4] Other aspects of initial management for elderly patients with fracture of the femur have not been investigated scientifically, so I followed the Scottish Intercollegiate Guideline Network guidelines.[5 6] These included assessment of the patient's medical and social situation, mental state, and functional ability, and aspects of management such as care of pressure areas and attention to fluid and electrolyte imbalance.

Should I operate or not?

In managing a fractured femur, the first clinical question is: "Should the fracture be treated surgically or conservatively by traction?" The relevant Cochrane review had studied four randomised trials on this question and concluded that although there did not seem to be any major difference in mortality, operative treatment was associated with improved rehabilitation.[7] Given this conclusion, it seemed reasonable to propose surgery, and the patient agreed.

Anticoagulation prophylaxis

The use of anticoagulation prophylaxis has generated a great deal interest and over 50 randomised trials. Time pressures obliged me to confine my reading to the Cochrane review on heparin and mechanical devices[8] and the Scottish Intercollegiate Guidelines Network guidelines.[6] On balance, I decided to opt for prophylaxis with heparin delivered by subcutaneous injection. Furthermore, I noted that I should consider participating in further multicentre randomised trials on this subject.[8]

When should I operate?

The Cochrane Library had no reviews or randomised trials on the timing of surgery. A Medline search using the term "hip fracture and timing" identified nine articles from the past 8 years. None were randomised studies, but all the comparative series and review articles identified indicated that surgery should be performed within 48 hours of admission to hospital, and preferably within 24 hours.[6] My patient's operation was therefore scheduled for the morning after admission.

The operation was to be performed with perioperative antibiotic cover.[9] Spinal anaesthesia was chosen because of its marginal benefits over general anaesthesia.[10]

Which implant?

Numerous implants are available for treating this fracture, and many case reports and comparative studies on this subject have been published. I limited my search to studies of implants that had been evaluated by randomised trials. A meta-analysis of these studies clearly indicated that the sliding hip screw was the best implant.[11–14] There were few randomised trials that discussed different aspects of surgical technique for this implant, but those available indicated that reduction of the fracture with osteotomy was inappropriate, as was intraoperative compression of the fracture.[15] I noted that surgery should only be undertaken in units that treat a sufficient number of patients—this is to ensure that the operating surgeon has sufficient experience of the procedure.[16]

Postoperative care and rehabilitation

Rehabilitation using a multidisciplinary team is strongly recommended by the Scottish Intercollegiate

Guidelines Network guidelines[6] but received a more guarded appraisal from the Cochrane review on the subject.[17] This is clearly a difficult area to evaluate objectively. The use of early discharge from hospital through "hospital at home" community services may be beneficial.[18] Since there are no studies that indicate otherwise, early mobilisation and weight bearing on the injured leg should be allowed. Other aspects of postoperative care should include supplementary oxygen,[6] nutritional support,[19] pain relief,[6] fluid balance monitoring,[6] and care of pressure areas.[6]

Preventing further fracture

Having sustained two fractures from simple falls, my patient was understandably worried about further fractures. A falls assessment should be part of her evaluation by the multidisciplinary team. In addition, her home should be assessed for possible environmental risk factors.[2 20 21] Hip protectors have no proved benefit in those living at home and for those who have already had one fracture of the femur.[22] Calcium and vitamin D supplementation will reduce her risk of further fractures, although its routine use is debatable.[23 24] I informed my patient that taking calcium and vitamin D supplements for 3 years would reduce the risk of her having a further fracture over that period by about 5% (number needed to treat, 20).

Outcome

My patient made an uneventful recovery from surgery. Nine days later she was discharged home with the support of the hospital at home services within the community.

Competing interests: None declared.

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(Accepted 19 April 1999)

Endpiece

Only the very best

It is supposed that illness can be cured and that there is a science about it, and people—and doctors—who know about it. Ah, but not all of them know—only the very best. When a child is ill one must get hold of the very best one, the one who saves, and then the child is saved; but if you don't get that doctor, or if you don't live in the place where that doctor lives, the child is lost.

Leo Tolstoy, *The Kreutzer Sonata*, 1889. New York: The New American Library of World Literature,1960:197.

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